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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
GREY, CHRISTOPHER	
ART UNIT	PAPER NUMBER
2667	

DATE MAILED: 09/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/816,578	SYRJARINNE, JARI	
	Examiner	Art Unit	
	Christopher P Grey	2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 March 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10-17 and 19* is/are rejected.

7)☒ Claim(s) *9 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: Specification is not properly labeled.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
(e) BACKGROUND OF THE INVENTION.
(1) Field of the Invention.
(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(f) BRIEF SUMMARY OF THE INVENTION.
(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(h) DETAILED DESCRIPTION OF THE INVENTION.
(i) CLAIM OR CLAIMS (commencing on a separate sheet).
(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if

the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krasner (WO 99/57573) in view of Bloebaum (US 6,295,023).

Regarding claim 1, the Krasner shows in a GPS system, a modulated signal being sent from one or more satellites (signal samples contain at least in part common information), to a receiver that performs demodulation. A receiver in the GPS (standard positioning service) system is capable of combining common information (using summation) between two or more portions of one or more satellite messages (analysis signal) to determine navigation information such as time and position, disclosed in elements 104, 106 and 108 in Fig 1 and on page 5 lines 21-34. This combination of common data may represent TOW, almanac, and or other common information between a set of satellite messages.

Krasner does not disclose the following:

Regarding claim 1, in the method the signal transmitted by two or more satellites is received, the transit time differences of the received signals are determined for mutual synchronization of the signals transmitted from different satellites.

The secondary reference, Bloebaum, shows a method for receiving a plurality of signals in a GPS system, where mutual synchronization is accomplished by providing a first timing synchronization reference, and then expected timing for others of the plurality of GPS satellites are adjusted based on the first timing sync reference (transit time differences), as disclosed in Col 6 lines 30-48.

Regarding claim 2, the Krasner discloses all of the limitations except for: reference information is formed, and said reference information is compared to said analysis signal for finding at least one said signal, which contains the same information;

The secondary reference, Bloebaum shows the determination of expected information (reference information) that contains navigation data, TOW fields and HOW fields, (disclosed in Col 11 lines17-37). The expected information is compared to the actual information received from the plurality of satellites, which was disclosed in the first reference as a combination of common information (analysis signal). This comparison is accomplished by correlation, as disclosed in Col 5 lines 24-44.

Regarding claim 3, Krasner discloses all of the limitations of claim 3, but does does not disclose correlation is used in the comparison.

Bloebaum shows the determination of expected information (reference information) that contains navigation data, TOW fields and HOW fields, (disclosed in Col 11 lines17-37). The expected information is compared to the actual information received from the plurality of satellites, which was disclosed in the first reference as a combination of common information (analysis signal). This comparison is accomplished by correlation, as disclosed in Col 5 lines 24-44.

Regarding claim 4, Kranser discloses all of the limitations of claim 4, but does does not disclose the information to be transmitted is sent in one or more data frames (SFI-SF5), and at least one data frame (SFI-SFS) includes at least an initial synchronization part (preamble, P), characterized in that the preamble (P) is searched from the analysis signal in the method;

Bloebaum shows the comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data:
Navigation data such as ephemeris, TOW information, preamble, etc as disclosed in Col 15 lines 44-67.

Regarding claim 5, Krasner discloses all of the limitations of claim 5, but does does not disclose the information to be transmitted is sent in one or more data frames (SFI-SF5), and at least one data frame (SFI-SF5) includes at least time data (TOW), characterized in that said time information (TOW) is searched from the analysis signal in the method;

Bloebaum shows the comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data: Navigation data such as ephemeris, TOW information, preamble, etc as disclosed in Col 15 lines 44-67.

Regarding claim 6, Krasner discloses all of the limitations of claim 6, but does does not disclose the information to be transmitted is sent in one or more data frames (SF1-SF5), and at least one data frame (SFI-SFS) includes at least identification information (1D), characterized in that said identification information (ID) is searched from the analysis signal in the method.

The secondary reference, Bloebaum discloses the comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data:

Navigation data such as ephemeris, TOW information, preamble, etc (where etc. is aimed at ID information which is necessary for comparison) as disclosed in Col 15 lines 44-67.

Regarding claim 7, Krasner discloses all of the limitations of claim 7, but does not disclose the information to be transmitted includes at least ephemeris data, characterized in that ephemeris data is used in the method for determining the location of the receiver.

The secondary reference discloses the comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data: Navigation data such as ephemeris etc. as disclosed in Col 15 lines 44-67.

Regarding claim 8, Krasner discloses all of the limitations of claim 8, but does not does not disclose the information to be modulated in the method is binary information, and thus the information to be modulated consists of a number of information bits, each of which has either the first or the second binary value.

The secondary reference Bloebaum shows that the acquired signal, which is code modulated is sent in the form of navigation bits (information bits), as disclosed in Col 5 lines 5-23.

It would have been obvious to one skilled in the art at the time to modify the combination of samples signal (analysis signal) produced in the primary reference with the method of receiving a GPS signal, particularly correlation with a reference signal (which is common in a GPS receiver) in the secondary reference in order to retrieve navigation information, TOW information and other information contained in the analysis signal. Other reasons for the modification are for initial synchronization and improving the SNR of the incoming signal in the receiver for further processing.

Claims 10 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krasner (WO 99/57573) in view of Hirata et al. (US 6, 483, 457).

Regarding claims 10 and 19, the Krasner discloses in a GPS system, which transmits satellite signals, a means within the receiver by which to combine common portions of two or more satellite signals (analysis signal). This method is known as inter SV signal processing, which suggests that this is accomplished in a signal processing means (DSP), as disclosed in page 5 line 21- page 6 line 8. The primary reference makes mention that the invention is applicable to many forms of the GPS receiver as disclosed in Page 4 line11-24.

Krasner does not show:

Regarding claim 10 a receiver (MS), which comprises at least synchronization means (3, 4, 7, 16) for synchronizing the receiver (MS) to the code modulated signal transmitted by the satellites (SV1-SV4), and demodulation means (1, 2a-2d, 5) for clarifying the transmitted information and the receiver (MS) also comprises means (1,

2a-2d) for receiving the signal transmitted by two or more satellites (SV1-SV4), and that said synchronization means comprise at least means (7, 10, 11) for determining the transit time differences of the received signals, means (3) for synchronizing the received signals of different satellites (SVI-SV4) for mutual synchronization of the signals on the basis of said transit time differences.

Krasner also does not show:

Regarding claim 19, a receiver (MS), which comprises synchronization means (3, 4, 7,16) for synchronizing the receiver (MS) to the code modulated signal transmitted by the satellites (SV1-SV4), and demodulation means (1, 2a-2d, 5) for clarifying the transmitted information, and from which satellites at least partly the same information has been arranged to be transmitted essentially simultaneously, characterized in that the receiver (MS) also comprises means (1, 2a-2d) for receiving the signal transmitted by two or more satellites (SV1-SV4), means (2a-2d) for determining the transit time differences of the received signals, and that said synchronization means comprise at least means (7, 10, 1 1) for determining the transit time differences of the received signals, means (3) for mutual synchronization of the received signals of different satellites (SVI-SV4) on the basis of said transit time differences, and means (3, 4) for forming an analysis signal by using at least part of at least two synchronized signals received from different satellites (SV1-SV4).

The third reference, Hirata et al. discloses a GPS system composed of the following components (see Col 8 lines 41-67):

An antenna (element 6 in fig 2) and receiving frequency converter (element17 in fig 2) for reception of the signal and mixing a receiving frequency output, also an oscillator frequency Doppler detector (disclosed in Col 5 lines 53- 67), ultimately clarifying the transmitted information in the receiving section (element 7 in fig 2).
A DSP (element 30 in fig 2, memory (element 21 in fig 2), CPU (elements 26-28 in fig 2) and a reference signal (element 31 in fig 5 and Col 5 lines 14-40), which are all dedicated towards the synchronization of the receiver.
An antenna (element 9 in fig 2), a radio unit (element10 in fig2) and a CPU (element 28 in fig 2) which receives time signal from time server in order to calculate the exact time signal (transit time), as disclosed in fig 18.
Therefore it would have been obvious to one skilled in the art at the time to modify the analysis signal disclosed in Krasner into the DSP section of the receiver in the Hirata et al., resulting in correlation of a better SNR signal. This modification is apparent by the primary reference making note that his invention is applicable in many forms of the GPS system.

Claims 11-17 rejected under 35 U.S.C. 103(a) as being unpatentable over Krasner (WO 99/57573) in view of Hirata et al. (US 6, 483, 457) in further view of Bloebaum (US 6,295,023).

Krasner discloses a GPS system, which transmits satellite signals, a means within the receiver by which to combine common portions of two or more satellite signals (analysis signal). This method is known as inter SV signal processing, which

suggests that this is accomplished in a signal processing means (DSP), as disclosed in page 5 line 21- page 6 line 8. Krasner makes mention that the invention is applicable to many forms of the GPS receiver as disclosed in Page 4 line11-24.

Hirata discloses a GPS system composed of the following components (see Col 8 lines 41-67):

An antenna (element 6 in fig 2) and receiving frequency converter (element17 in fig 2) for reception of the signal and mixing a receiving frequency output, also an oscillator frequency Doppler detector (disclosed in Col 5 lines 53- 67), ultimately clarifying the transmitted information in the receiving section (element 7 in fig 2).

A DSP (element 30 in fig 2, memory (element 21 in fig 2), CPU (elements 26-28 in fig 2) and a reference signal (element 31 in fig 5 and Col 5 lines 14-40), which are all dedicated towards the synchronization of the receiver.

An antenna (element 9 in fig 2), a radio unit (element10 in fig2) and a CPU (element 28 in fig 2) which receives time signal from time server in order to calculate the exact time signal (transit time), as disclosed in fig 18.

Regarding claim 11, Krasner and Hirata disclose all of the limitations of claim 11 but fail to disclose a receiver (MS) comprises at least means (16) for forming at least one piece of reference information, and comparison means (7, 8) for comparing said reference information to said analysis signal for finding at least one said signal, which contains the same information.

The secondary reference, Bloebaum teaches a GPS system, where within, a GPS receiver computes expected symbols and messages (generates a reference signal) as disclosed in Col 10 lines 18-33. The receiver also has a means by which a comparison (correlation) is made between input signals and the expected message as disclosed in elements 300, 302 and 305 in fig 8, which is an illustration having operations carried out by a CPU.

The secondary reference also teaches a GPS system with a receiver which makes a comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data:

Regarding claim 12, Krasner and Hirata disclose all of the limitations of claim 12 but fail to disclose a receiver (MS), characterized in that the comparison means comprise means (7) for performing correlation between said reference information and said analysis signal.

The secondary reference, Bloebaum teaches a GPS system, where within, a GPS receiver computes expected symbols and messages (generates a reference signal) as disclosed in Col 10 lines 18-33. The receiver also has a means by which a comparison (correlation) is made between input signals and the expected message as disclosed in elements 300, 302 and 305 in fig 8, which is an illustration having operations carried out by a CPU.

Regarding claim 13, Krasner and Hirata disclose all of the limitations of claim 13 but fail to disclose a receiver (MS), in which the information to be transmitted has been sent in one or more data frames (SF1-SF5), and at least one data frame (SFI-SF5) includes at least an initial synchronization part (preamble, P), characterized in that said comparison means comprise means (3, 4) for searching said preamble (P) from the analysis signal.

The secondary reference, Bloebaum also teaches a GPS system with a receiver which makes a comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data:

Navigation data such as ephemeris, TOW information, preamble are disclosed in Col 15 lines

Regarding claim 14, Krasner and Hirata disclose all of the limitations of claim 14 but fail to disclose a receiver (MS), in which the information to be transmitted has been sent in one or more data frames (SFI-SF5), and at least one data frame (SFI-SF5) includes at least time data (TOW), characterized in that said comparison means comprise means (3, 4) for searching said time data (TOW) from the analysis signal.

Bloebaum teaches a GPS system with a receiver which makes a comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data:

Navigation data such as ephemeris, TOW information, preamble, etc are disclosed in Col 15 lines

Regarding claim 15, Krasner and Hirata disclose all of the limitations of claim 15 but fail to disclose the information to be transmitted has been sent in one or more data frames (SFI SF5), and at least one data frame (SFI SF5) includes at least identification information (1D), characterized in that said comparison means comprise means (3, 4) for searching said identification information (ID) from the analysis signal.

Bloebaum teaches a GPS system with a receiver which makes a comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data:

Navigation data such as ephemeris, TOW information, preamble, etc (where etc. is aimed at ID information which is necessary for comparison) are disclosed in Col 15 lines

Regarding claim 16, Krasner and Hirata disclose all of the limitations of claim 16 but fail to disclose a receiver (MS), in which the information to be transmitted includes at least ephemeris data, characterized in that the receiver also comprises means (3, 4, 7, 8) for using said ephemeris data for determining the location of the receiver (MS).

Bloebaum teaches a GPS system with a receiver which makes a comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data:

Navigation data such as ephemeris, TOW information, preamble, etc (where etc. is aimed at ID information which is necessary for comparison) are disclosed in Col 15 lines

Regarding claim 17, Krasner and Hirata disclose all of the limitations of claim 17 but fail to disclose the information to be modulated is binary information, and thus the information to be modulated consists of a number of information bits, each of which has either the first or the second binary value.

Bloebaum shows that the acquired signal, which is code modulated is sent in the form of navigation bits (information bits), as disclosed in Col 5 lines 5-23.

It would have been obvious to one skilled in the art at the time to incorporate the analysis signal produced in the primary reference, into the receiving functions of the GPS system of the secondary reference, and modifying it so as to have the major components enclosed within the third reference. The motivation for these incorporations and modifications is in order to achieve a GPS receiver capable of efficiently handling weak SNR signals by combining common information of input signals and performing correlation with a reference signal.

Allowable Subject Matter

Claim 9 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: Within the references provided there is no description of the modulation being carried such that if the value of the information bit to be modulated is the first binary value, values selected for the chips are used, or if the value of the information bit is the second binary value, the value opposite to the value selected for each ship has been used in the modulation.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P Grey whose telephone number is (571)272-3160. The examiner can normally be reached on 6:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (571)272-3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christopher Grey
Examiner
Art Unit 2667
CPG 9/17/04

9/17/04
AFSAR QURESHI
PATENT EXAMINER